

## 6202.0 - Labour Force, Australia, Sep 2015

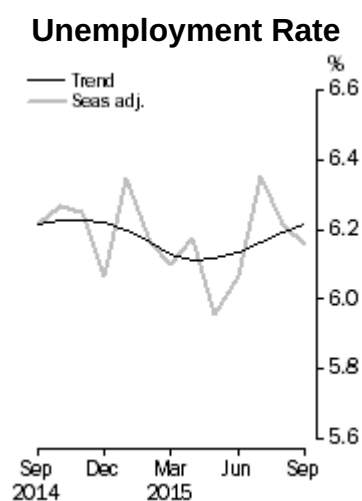
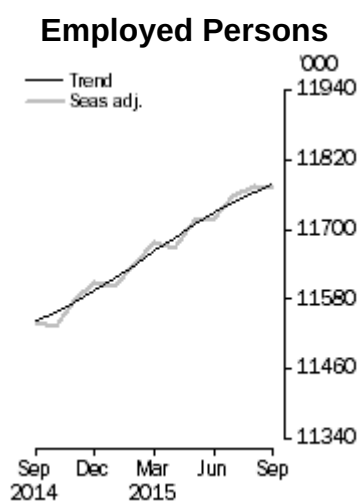
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## Summary

### Main Features

#### SEPTEMBER KEY FIGURES

	Aug 2015	Sep 2015	Aug 15 to Sep 15	Sep 14 to Sep 15
<b>Trend</b>				
Employed persons ('000)	11 763.4	11 775.8	12.4	2.0 %
Unemployed persons ('000)	776.8	780.6	3.9	2.1 %
Unemployment rate (%)	6.2	6.2	0.0 pts	0.0 pts
Participation rate (%)	64.9	65.0	0.0 pts	0.4 pts
<b>Seasonally Adjusted</b>				
Employed persons ('000)	11 774.9	11 769.9	-5.1	2.0 %
Unemployed persons ('000)	780.7	772.5	-8.1	1.0 %
Unemployment rate (%)	6.2	6.2	-0.1 pts	-0.1 pts
Participation rate (%)	65.0	64.9	-0.2 pts	0.3 pts



#### SEPTEMBER KEY POINTS

#### TREND ESTIMATES (MONTHLY CHANGE)

- Employment increased to 11,775,800.
- Unemployment increased to 780,600.
- Unemployment rate remained steady at 6.2%.

- Participation rate increased less than 0.1 pts to 65.0%.
- Monthly hours worked in all jobs increased 1.8 million hours to 1,631.9 million hours.

## **SEASONALLY ADJUSTED ESTIMATES (MONTHLY CHANGE)**

- Employment decreased 5,100 to 11,769,900. Full-time employment decreased 13,900 to 8,124,400 and part-time employment increased 8,900 to 3,645,500.
- Unemployment decreased 8,100 to 772,500. The number of unemployed persons looking for full-time work decreased 6,000 to 556,100 and the number of unemployed persons only looking for part-time work decreased 2,200 to 216,500.
- Unemployment rate remained at 6.2%, but decreased 0.1 pts based on unrounded estimates.
- Participation rate decreased to 64.9%, a 0.2 pts decrease based on unrounded estimates.
- Monthly hours worked in all jobs increased 12.2 million hours (0.7%) to 1,638.0 million hours.

## **NOTES**

### **FORTHCOMING ISSUES**

<b>ISSUE</b>	<b>Release Date</b>
October 2015	12 November 2015
November 2015	10 December 2015
December 2015	14 January 2016
January 2016	18 February 2016
February 2016	17 March 2016
March 2016	14 April 2016

### **WHAT'S NEW IN THE LABOUR FORCE**

For details on changes from the January 2016 issue to release timing of Labour Force products, refer to What's new in the Labour Force on page 6.

### **ROUNDING**

Estimates of changes shown on the front cover and used in the commentary have been calculated using unrounded estimates, and may be different from, but are more accurate than, movement obtained from the rounded estimates. The graphs on the front cover also depict unrounded estimates.

### **SAMPLING ERROR**

The estimates in this publication are based on a sample survey. Published estimates and movements are subject to sampling variability. Standard errors give a measure of sampling variability. The interval bounded by two standard errors is the 95% confidence interval, which provides a way of looking at the variability inherent in estimates. There is a 95%

chance that the true value of the estimate lies within that interval.

## **MOVEMENTS IN SEASONALLY ADJUSTED SERIES BETWEEN AUGUST 2015 AND SEPTEMBER 2015**

	<b>Monthly change</b>	<b>95% Confidence interval</b>		
Total Employment	-5 100	-63 100	to	52 900
Total Unemployment	-8 100	-46 500	to	30 300
Unemployment rate	-0.1 pts	-0.5 pts	to	0.3 pts
Participation rate	-0.2 pts	-0.6 pts	to	0.2 pts

## **INQUIRIES**

For further information about these and related statistics, email [client.services@abs.gov.au](mailto:client.services@abs.gov.au) or contact the National Information and Referral Service on 1300 135 070. The ABS Privacy Policy outlines how the ABS will handle any personal information that you provide to us.

# **Labour Force Commentary September 2015**

## **LABOUR FORCE COMMENTARY SEPTEMBER 2015**

### **NATIONAL ESTIMATES**

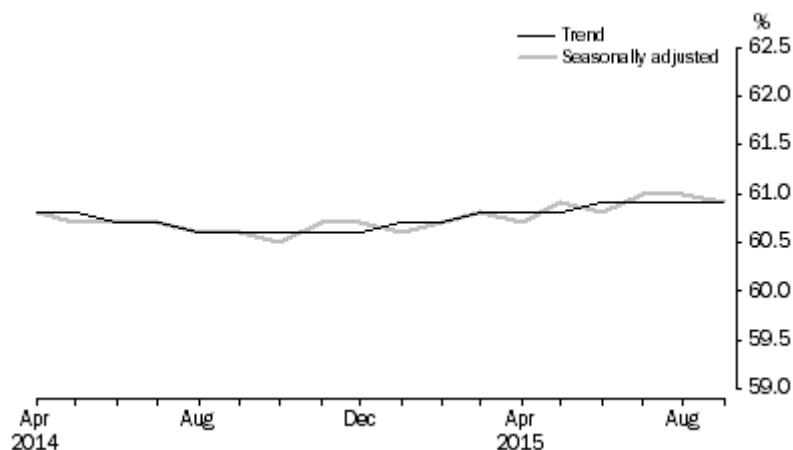
Australia's unemployment rate remained at 6.2% (seasonally adjusted) in September 2015, but decreased 0.1 percentage points based on unrounded estimates with:

- the number of employed persons decreasing by 5,100 to 11,769,900,
- the number of unemployed persons decreasing by 8,100 to 772,500, and
- the participation rate decreasing 0.2 percentage points (based on unrounded estimates) to 64.9%.

In trend terms, the unemployment rate was unchanged at 6.2% in September 2015. The number of employed persons in September 2015 increased by 12,400 to 11,775,800 and the number of unemployed persons increased by 3,900 to 780,600 in trend terms. The trend participation rate increased less than 0.1 percentage points to 65.0% in September 2015.

The employment to population ratio, which expresses the number of employed persons as a percentage of the civilian population aged 15 years and over, decreased 0.1 percentage points to 60.9% in September 2015 (seasonally adjusted). In trend terms, the employment to population ratio was unchanged at 60.9%.

**Employment to population ratio, Persons, April 2014 to September 2015**



Seasonally adjusted full-time employment decreased by 13,900 persons to 8,124,400 while part-time employment increased by 8,900 to 3,645,500 persons in September 2015. The decrease in total employment resulted from:

- a decrease in male full-time employment, down 11,000 persons
- a decrease in female full-time employment, down 2,900 persons
- a decrease in male part-time employment, down 2,100 persons
- an increase in female part-time employment, up 11,000 persons.

Seasonally adjusted monthly hours worked in all jobs increased 12.2 million hours in September 2015 to 1,638.0 million hours.

## STATE ESTIMATES

The largest absolute decreases in seasonally adjusted employment were in Western Australia (down 9,300 persons) and South Australia (down 8,400 persons). The state with the largest increase in seasonally adjusted employment was Queensland (up 4,600 persons).

The largest decreases in the seasonally adjusted participation rate were in South Australia (down 0.8 percentage points), Western Australia (down 0.6 percentage points) and Tasmania (down 0.5 percentage points).

The largest decreases in the seasonally adjusted unemployment rate were in Tasmania (down 0.4 percentage points) and South Australia (down 0.2 percentage points). The only state with an increase in the seasonally adjusted unemployment rate was Victoria (up 0.1 percentage points).

Seasonally adjusted estimates are not published for the territories and the ABS recommends using trend estimates to analyse the underlying behaviour of the series.

### Unemployment rate, States and Territories, August 2015 and September 2015

	Trend		Seasonally Adjusted	
	August %	September %	August %	September %
New South Wales	5.9	5.9	6.0	5.9
Victoria	6.2	6.2	6.1	6.2
Queensland	6.3	6.3	6.4	6.3

South Australia	7.9	8.0	7.9	7.7
Western Australia	6.1	6.2	6.1	6.1
Tasmania	6.4	6.2	6.4	6.0
Northern Territory	4.7	4.9	np	np
Australian Capital Territory	4.9	5.1	np	np
<b>Australia</b>	<b>6.2</b>	<b>6.2</b>	<b>6.2</b>	<b>6.2</b>

np not available for publication but included in totals where applicable, unless otherwise indicated

## GROSS FLOWS

Gross flows (Data Cube GM1) highlight the change in labour force status of individuals between last month and this month. Gross flows are derived from the matched part of the sample that is common between two consecutive months. After taking account of sample rotation and varying non-response each month, this is approximately 80% of the sample. However, the level and movement estimates produced from the gross flows will not necessarily represent 80% of the level and movement estimates in a given month from the whole sample. Despite this limitation, analysis of the gross flows data can provide an indication, in original terms, of underlying movements in the labour market.

In original terms between August and September 2015 the number of persons employed increased by 70,500 with gross flows showing a net increase of 57,700. The increase shown in the gross flows comprised:

- 225,200 persons whose status changed from not in the labour force to employed,
- 112,400 persons whose status changed from unemployed to employed,
- 65,200 persons whose status changed from employed to unemployed, and
- 214,700 persons whose status changed from employed to not in the labour force.

In original terms between August and September 2015 the number of persons unemployed decreased by 7,800 with gross flows showing a net decrease of 19,900. The decrease shown in the gross flows comprised:

- 120,500 persons whose status changed from unemployed to not in the labour force,
- 112,400 persons whose status changed from unemployed to employed,
- 65,200 persons whose status changed from employed to unemployed, and
- 147,800 persons whose status changed from not in the labour force to unemployed.

As the gross flows data are presented in original terms they are not directly comparable to the seasonally adjusted and trend data discussed elsewhere in the commentary.

## What's New in the Labour Force

### WHAT'S NEW IN THE LABOUR FORCE

### CHANGE TO THE RELEASE TIMING OF LABOUR FORCE PRODUCTS

The Independent Technical Review (McCarthy Review) into the ABS's Labour Force Survey

(LFS) conducted in 2014 presented a number of recommendations including that the ABS consider "whether or not it is necessary to delay publishing LFS data until early in the week following the current timetable on an ongoing basis or at least when changes are being made to the LFS". The ABS has consulted with stakeholders on this issue and the stakeholders almost unanimously supported the proposal to delay by one week the release of *Labour Force, Australia* (cat. no. 6202) and the related detailed monthly (cat. no. 6291.0.55.001) and detailed quarterly (cat. no. 6291.0.55.003) products.

Based on this feedback the ABS will delay the release of these products by one week from the January 2016 issue. Implementing the change from the January 2016 issue will ensure that key users have sufficient opportunity to include the new release dates in their schedules. The delayed release means, for example, that the January 2016 issue of *Labour Force, Australia* will be released on Thursday 18 February instead of Thursday 11 February.

The revised release dates are included in the Forthcoming Releases section of the Notes page of this issue.

The ABS will review the release timing after 12 months to ensure that the requirements of key clients are being met.

An update on each of the recommendations from the Independent Technical Review was included in the July 2015 issue of *Labour Force, Australia*.

## Article Archive

This section provides an archive of articles and analysis published in *Labour Force, Australia* (cat. no. 6202.0), promoting the effective use of labour force statistics. Articles are sorted by publication date.

Articles on labour related topics are also available in *Australian Labour Market Statistics* (cat. no. 6105.0) and *Australian Social Trends* (cat. no. 4102.0).

### Labour Force Survey Archive

Online Collection in the Labour Force Survey	August 2015
What's New in the Labour Force	July 2015
Progress with recommendations from the Independent Technical Review	July 2015
Assessing Volatility in the Labour Force Series	June 2015
What's New in the Labour Force	June 2015
Update on Recommendations 10 and 11 from the Independent Technical Review	June 2015
What's New in the Labour Force	May 2015
Update on Recommendation 7 from the Independent Technical Review	May 2015
What's New in the Labour Force	April 2015
What's New in the Labour Force	March 2015
Annual Seasonal Reanalysis	March 2015
Update on Recommendations from the Independent Technical Review	March 2015
What's new in the Labour Force	February 2015
Online Collection in the Labour Force Survey	February 2015
Rebenchmarking Labour Force Estimates	February 2015

What's new in the Labour force	January 2015
What's new in the Labour force	December 2014
Independent Technical Review into the Labour Force Survey and ABS Response	November 2014
What's new in the Labour force	November 2014
Removing the effect of Supplementary Surveys from seasonally adjusted estimates	October 2014
Changes in this and upcoming labour force issues	September 2014
Changes in this and upcoming labour force issues	August 2014
What's new in the Labour force	July 2014
What's new in the Labour force	June 2014
What's new in the Labour force	May 2014
What's new in the Labour force	February 2014
Rebenchmarking Labour Force Estimates to the 2011 Census of Population and Housing	January 2014
What's new in the Labour force	December 2013
Understanding the Australian Labour Force using ABS statistics	December 2013
What's new in the Labour Force	November 2013
Understanding full-time/part-time status in the Labour Force Survey	September 2013
What's new in the Labour Force	September 2013
Fact sheet did you know - Underemployment	June 2013
What's new in the Labour Force	June 2013
New Labour Force Sample Design	May 2013
Annual Seasonal Reanalysis	May 2013
What's new in Labour Force	May 2013
Transition to online collection of the Labour Force Survey	April 2013
What's new in Labour Force	April 2013
Estimating Jobs in the Australian Labour Market	February 2013
Forthcoming improvements to the content of the Labour Force and Labour Supplementary Surveys	January 2013
What's new in Labour Force	January 2013
Understanding the Australian Labour Force using ABS statistics	January 2013
Rebenchmarking of Labour Force Series	November 2012
Upcoming changes to the Labour Force Survey	July 2012
Labour Household Surveys content review and the Labour Force Survey	June 2012
Employment and mining in Queensland, New South Wales and Western Australia	May 2012
ABS Response to recent concerns expressed about employment estimates	April 2012
Population Benchmarks and Labour Force Survey	April 2012
Annual Seasonal Reanalysis	March 2012
Exploring Labour Force Data on joblessness	February 2012
Employment level estimates versus employment to population explained	January 2012
Understanding the Australian Labour Force using ABS statistics	November 2011
Historical Revisions	February 2011
Impact of the floods on the Labour Force Survey	January 2011

## About this Release

Summary results of the monthly Labour Force Survey containing estimates of employed and unemployed persons classified by sex, full-time/part-time status, states and territories and some age groups; and persons not in the labour force.

# Explanatory Notes

## Explanatory Notes

### EXPLANATORY NOTES

#### INTRODUCTION

**1** This publication contains estimates of the civilian labour force derived from the Labour Force Survey component of the Monthly Population Survey. The full time series for estimates from this publication are also available electronically. More detailed estimates are released one week after this publication in various electronic formats - see Labour Force, Australia, Detailed - Electronic Delivery (cat. no. 6291.0.55.001) and Labour Force, Australia, Detailed, Quarterly (cat. no. 6291.0.55.003).

#### CONCEPTS, SOURCES AND METHODS

**2** The conceptual framework used in Australia's Labour Force Survey aligns closely with the standards and guidelines set out in Resolutions of International Conferences of Labour Statisticians. Descriptions of the underlying concepts and structure of Australia's labour force statistics, and the sources and methods used in compiling the estimates, are presented in Labour Statistics: Concepts, Sources and Methods (cat. no. 6102.0.55.001) which is available on the ABS website <<https://www.abs.gov.au>>.

#### LABOUR FORCE SURVEY

**3** The Labour Force Survey is based on a multi-stage area sample of private dwellings (currently approximately 26,000 houses, flats, etc.) and a list sample of non-private dwellings (hotels, motels, etc.), and covers approximately 0.32% of the civilian population of Australia aged 15 years and over.

**4** Information is obtained from the occupants of selected dwellings by specially trained interviewers using computer-assisted interviewing, or self-completion online.

**5** Households selected for the Labour Force Survey are interviewed each month for eight months, with one-eighth of the sample being replaced each month. The first interview is generally conducted face-to-face. Subsequent interviews are conducted by telephone (if acceptable to the respondent).

**6** From December 2012 to April 2013, the ABS conducted a trial of online electronic data collection. Respondents in one rotation group (i.e. one-eighth of the survey sample) were offered the option of self completing their labour force survey questionnaire online instead of via a face-to-face or telephone interview. From May 2013, the ABS expanded the offer of online electronic collection to 50% of each new incoming rotation group. For more



information see the article in the April 2013 issue of this publication. From September 2013, online electronic collection has been offered to 100% of private dwellings in each incoming rotation group. From April 2014, 100% of private dwellings are being offered online electronic collection.

**7** The interviews are generally conducted during the two weeks beginning on the Sunday between the 5th and 11th of each month. The information obtained relates to the week before the interview (i.e. the reference week). Each year, to deal with operational difficulties involved with collecting and processing the Labour Force Survey around the Christmas and New Year holiday period, interviews for December start four weeks after November interviews start (i.e. between the 3rd and 9th December), and January interviews start five weeks after December interviews start. As a result, January interviewing may commence as early as the 7th or as late as the 13th, depending on the year. Occasionally, circumstances that present significant operational difficulties for survey collection can result in a change to the normal pattern for the start of interviewing.

**8** Estimates from the Labour Force Survey are usually published first in this publication 32 days after the commencement of interviews for that month, with the exception of estimates for each December which are usually published 39 days after the commencement of interviews.

## **SCOPE OF SURVEY**

**9** The Labour Force Survey includes all persons aged 15 years and over except members of the permanent defence forces, certain diplomatic personnel of overseas governments customarily excluded from census and estimated population counts, overseas residents in Australia, and members of non-Australian defence forces (and their dependants) stationed in Australia.

## **COVERAGE**

**10** In the Labour Force Survey, coverage rules are applied which aim to ensure that each person is associated with only one dwelling, and hence has only one chance of selection. The coverage rules are necessarily a balance between theoretical and operational considerations. Nevertheless, the chance of a person being enumerated at two separate dwellings in the survey is considered to be negligible.

## **POPULATION BENCHMARKS**

**11** The Labour Force Survey estimates are calculated in such a way as to add to independent estimates of the civilian population aged 15 years and over (population benchmarks). These population benchmarks are based on the most recently released estimates of Final, Revised and Preliminary quarterly Estimated Resident Population (ERP). For information on the methodology used to produce the ERP see Australian Demographic Statistics (cat. no. 3101.0). Since the most recently released ERP estimates lag the current time period for Labour Force estimates by nine months, the Labour Force population benchmarks are created by projecting forward three quarters past the most recently released quarterly ERP estimates. The projection is based on the historical pattern of each population component - births, deaths, interstate migration and net overseas migration (NOM). Projected estimates of NOM are supplemented with other data sources to better forecast population changes in the short-term. The main data source is the forecasts published by the Department of Immigration & Border Protection in the publication The

## Outlook for Net Overseas Migration.

**12** Commencing in March 2010, the ERP series has been revised twice-yearly, in the March and September quarter issues of Australian Demographic Statistics (cat. no. 3101.0). This biannual revision cycle incorporates more up to date information available for NOM. This updated information is included in the population benchmarks used in creating the Labour Force estimates when they are rebenchmarked.

**13** Every five years, the ERP series are revised to incorporate additional information available from the latest Census of Population and Housing (Census). Labour Force Survey population benchmarks, and the estimates, are revised following this five-yearly revision in the ERP. The process of incorporating the revised population benchmarks is referred to as 'rebasings'. From the January 2014 issue of this publication, labour force estimates have been compiled using population benchmarks based on the results of the 2011 Census. Revisions were made to historical Labour Force estimates from June 2006 to December 2013. In addition, estimates from July 1991 to May 2006 were revised to reflect population benchmarks based on ERP revised following the 2011 Census. The next rebasing based on the Census will be following the release of the 2016 Census-based ERP estimates, which will incorporate revisions back five years. For more information on revised ERP estimates, refer to the June 2012 issue of Australian Demographic Statistics (cat. no. 3101.0) released in December 2012.

**14** In between Censuses, the ABS revises the Labour Force population benchmarks using the latest ERP according to the paragraphs above. These were introduced in the July 2010, November 2012 and April 2013 issues. The revisions planned for the October 2013, April 2014 and November 2014 issues were not implemented (see What's New in the Labour Force in the September 2013 issue and Changes in this Issue in the October 2014 issue of this publication). From the February 2015 issue, rebenchmarking will be undertaken quarterly in the February, May, August and November issues apart from May 2015. For more information, refer to the article Rebenchmarking of Labour Force Series in the February 2015 issue of this publication.

## ESTIMATION METHOD

**15** The estimation method used in the Labour Force Survey is Composite Estimation, which was introduced in May 2007. In January 2014 composite estimation was applied to all estimates from July 1991 as part of the 2011 Census rebenchmarking. Composite Estimation combines data collected in the previous six months with current month's data to produce the current month's estimates, thereby exploiting the high correlation between overlapping samples across months in the Labour Force Survey. The Composite Estimator combines the previous and current months' data by applying different factors according to length of time in the survey. After these factors are applied, the seven months of data are weighted to align with current month population benchmarks. For details see Information Paper: Forthcoming Changes to Labour Force Statistics, 2007 (cat. no. 6292.0).

## COMPARABILITY OF SERIES

**16** From April 1986, the definition of employed persons was changed to include persons who worked without pay between 1 and 14 hours per week in a family business or on a farm (i.e. contributing family workers). For further information, see paragraphs 22 and 23 of the Explanatory Notes in the February 2003 issue of Labour Force, Australia (cat. no. 6203.0).

**17** The ABS introduced telephone interviewing into the Labour Force Survey in August

1996. Implementation was phased in for each new sample group from August 1996 to February 1997. During the period of implementation, the new method produced different estimates than would have been obtained under the old methodology. The effect dissipated over the final months of implementation and was no longer discernible from February 1997. The estimates for February 1997 and onwards are directly comparable to estimates for periods prior to August 1996. For further details, see the feature article in the June 1997 issue of Labour Force, Australia (cat. no. 6203.0).

**18** From April 2001 the Labour Force Survey was conducted using a redesigned questionnaire containing additional data items and some minor definitional changes. The definition of unemployed persons was changed to include all persons who were waiting to start work and were available to start in the reference week. This change was introduced in February 2004, when historical unit record data were revised from April 2001 to January 2004. This revision created a small trend break at April 2001 in unemployed persons and unemployment rate series. For further details, see Information Paper: Forthcoming Changes to Labour Force Statistics, 2003 (cat. no. 6292.0), released in December 2003. From July 2014 the Labour Force Survey questionnaire was further redesigned and definitional changes made to active job search steps and duration of job search. For further details, see the Glossary and Information Paper: Forthcoming Changes to Labour Force Statistics, June 2014 (cat. no. 6292.0), released in October 2014.

**19** Core labour force series were revised in April 2001 for the period April 1986 to March 2001 for the remaining definitional changes introduced with the redesigned questionnaire, to reduce the impact of the changes on labour force series. For further details, see Information Paper: Implementing the Redesigned Labour Force Survey Questionnaire (cat. no. 6295.0) and the 2004 issue of Information Paper: Questionnaires Used in the Labour Force Survey (cat. no. 6232.0).

**20** In May 2007, an improved method of estimation, known as composite estimation, was introduced into the Labour Force Survey. In introducing this change, the ABS revised unit record data from April 2001 to April 2007 based on the new estimation method. No change was identified in the trend breaks in the unemployed persons and unemployment rate series which arose with the introduction of a redesigned survey form in April 2001 (as noted above in paragraph 18). In January 2014 composite estimation was applied to all estimates from July 1991 as part of the 2011 Census rebenchmarking. For further details, see Information Paper: Forthcoming Changes to Labour Force Statistics, 2007 (cat. no. 6292.0).

**21** As one of a range of ABS savings initiatives for the 2008-09 financial year, there was a 24% reduction in the LFS sample size for the period July 2008 to August 2009, relative to the June 2008 sample size. The sample reduction was reversed from September 2009 to December 2009, with December 2009 estimates being the first produced under the fully reinstated sample.

## **LABOUR FORCE SURVEY SAMPLE**

**22** The current Labour Force Survey sample has been selected using information collected in the 2011 Census of Population and Housing.

**23** The sample was introduced over four months - May 2013 to August 2013. Two rotation groups (i.e. one-quarter of the survey sample) were introduced each month. During the sample phase-in, the increased sample rotation had an impact on the quality of estimates. Movement standard errors increased by approximately 10%, representing, for example, an increase on the standard error on the Australian monthly change in employment for May 2013 from 27,000 to approximately 29,700.

**24** Due to the use of composite estimation, there was a marginal impact on the quality of level estimates. Gross Flows analysis were impacted by the sample phase-in with between 60% to 70% of the sample available for matching between the current and previous months instead of the usual 80%. After full transition to the new sample, the quality of level and movement estimates is at the level designed for under the 2011 sample design and are of similar quality as the 2006 sample design. For further details, see Information Paper: Labour Force Survey Sample Design (cat. no. 6269.0) released on 30 May 2013.

## **RELIABILITY OF ESTIMATES**

**25** Two types of error are possible in an estimate based on a sample survey: sampling error and non-sampling error.

**26** Sampling error occurs because a sample, rather than the entire population, is surveyed. One measure of the likely difference resulting from not including all dwellings in the survey is given by the standard error. There are about two chances in three that a sample estimate will differ by less than one standard error from the figure that would have been obtained if all dwellings had been included in the survey, and about nineteen chances in twenty that the difference will be less than two standard errors. Standard errors of key estimates for the latest month and of movements since the previous month of these estimates are shown in the standard errors section of this publication. Standard errors for other estimates and other movements may be calculated by using the spreadsheet contained in Labour Force Survey Standard Errors, Data Cube (cat. no. 6298.0.55.001) which is available free of charge on the ABS website <<https://www.abs.gov.au>>.

**27** Non-sampling error arises from inaccuracies in collecting, recording and processing the data. Every effort is made to minimise reporting error by the careful design of questionnaires, intensive training and supervision of interviewers, and efficient data processing procedures. Non-sampling error also arises because information cannot be obtained from all persons selected in the survey. The Labour Force Survey receives a high level of co-operation from individuals in selected dwellings, with the average response rate over the last year being 94%. See Glossary for definition of response rate.

## **SEASONAL ADJUSTMENT AND TREND ESTIMATION**

**28** Any original time series can be thought of as a combination of three broad and distinctly different types of behaviour, each representing the impact of certain types of real world events on the information being collected: systematic calendar related events, short-term irregular fluctuations and long-term cyclical behaviour. A multiplicative decomposition model is applied in the seasonal adjustment of Labour Force Time Series, where the original time series (O) is considered as the product of the underlying trend (T), a systematic calendar related or seasonal component (S) and an irregular component (I). This can be expressed as  $O = T \times S \times I$ . The contributions of each of these behaviours varies from series to series, as well as throughout time for a given series, depending on the nature of the interactions of real world events and the data of interest.

**29** Seasonal adjustment is a statistical technique that attempts to measure and remove the effects of systematic calendar related patterns including seasonal variation to reveal how a series changes from period to period. Seasonal adjustment does not aim to remove the irregular or non-seasonal influences which may be present in any particular month. This means that month-to-month movements of the seasonally adjusted estimates may not be reliable indicators of trend behaviour.

**30** The Labour Force Survey uses the concurrent seasonal adjustment method to derive seasonal factors. Concurrent seasonal adjustment uses data up to the current month to estimate seasonal factors for the current and all previous months. This process can result in revisions each month to estimates for earlier periods. However, in most instances, the only noticeable revisions will be to the seasonally adjusted estimates for the previous month and one year prior to the current month. From the March 2015 issue of this publication, the effects of supplementary surveys are removed prior to the estimation of seasonal factors for key Labour Force series from February 1978 onwards. While this methodology has addressed short term volatility in the seasonally adjusted series arising from changes to the timing and content of the supplementary survey program, in general prior corrections and resulting changed seasonal patterns can be identified and measured to a more reliable degree of certainty after three successive observations (in this case after three years). For further details refer to the October and December 2014 issues of this publication.

**31** The revision properties of the seasonally adjusted and trend estimates can be improved by the use of Autoregressive Integrated Moving Average (ARIMA) modelling. ARIMA modelling relies on the characteristics of the series being analysed to project future period data. The projected values are temporary, intermediate values, that are only used internally to improve the estimation of the seasonal factors. The projected data do not affect the original estimates and are discarded at the end of the seasonal adjustment process. The Labour Force Survey uses an ARIMA model for the majority of the individual time series. The ARIMA model is assessed as part of the annual reanalysis. For further details, see the feature article in the October 2004 issue of Australian Economic Indicators (cat. no. 1350.0).

**32** Seasonal adjustment is able to remove the effect of events which occur at the same time in the survey every year. However, there are some events, like holidays, which are not always at the same time in the survey cycle or which are not at the same time across Australia. The effects of these types of events on Labour Force Survey estimates cannot in all cases be removed, because the pattern of their effects cannot be determined. However, two events for which adjustment is made in the seasonally adjusted series are the January interview start date and the timing of Easter. For further details, see Information Paper: Forthcoming Changes to Labour Force Statistics (cat. no. 6292.0) released in December 2003.

**33** While seasonal factors for the complete time series are estimated each month, they will continue to be reviewed annually at a more detailed level to take into account each additional year's original data. This annual review will not normally result in significant changes to published estimates. The review is usually conducted early each year with the results released in this publication shortly thereafter.

**34** The smoothing of seasonally adjusted series to produce 'trend' series reduces the impact of the irregular component of the seasonally adjusted series. These trend estimates are derived by applying a 13-term Henderson-weighted moving average to all months except the last six. The last six monthly trend estimates are obtained by applying surrogates of the Henderson average to the seasonally adjusted series. Trend estimates are used to analyse the underlying behaviour of a series over time.

**35** While this smoothing technique enables estimates to be produced for the latest month, it does result in revisions in addition to those caused by the revision of seasonally adjusted estimates. Generally, revisions due to the use of surrogates of the Henderson average become smaller, and after three months have a negligible impact on the series.

**36** Trend estimates are published for the Northern Territory in table 10 and for the Australian Capital Territory in table 11. Unadjusted series for the two Territories have shown,

historically, a high degree of variability, which can lead to considerable revisions to the seasonally adjusted estimates each month when seasonal factors are estimated. For this reason, seasonally adjusted estimates are not currently published for the two Territories. In addition, caution should be exercised in the interpretation of trend estimates for the two Territories, particularly for the three most recent months, where revisions may be relatively large.

**37** For further information, see A Guide to Interpreting Time Series - Monitoring Trends (cat. no. 1349.0) or contact the Assistant Director, Time Series Analysis on (02) 6252 6345 or email [time.series.analysis@abs.gov.au](mailto:time.series.analysis@abs.gov.au).

## **RELATED PUBLICATIONS**

**38** Users may also wish to refer to the following publications:

- Labour Force Survey Standard Products and Data Item Guide (cat.no. 6103.0). This publication is a reference guide for users of Labour Force Survey data standard products.
- Australian Labour Market Statistics (cat. no. 6105.0). This publication presents key indicators of the labour market, articles on a range of labour market issues, and information about the latest developments in the labour statistics program. For further information about this publication, please contact Labour Market Statistics on (02) 6252 7206.

**39** ABS information about the labour market can be found on the Topics @ a Glance page on the ABS website <<https://www.abs.gov.au>>.

**40** Information about current publications and other products released by the ABS is available from the statistics page on the ABS website. The ABS also issues a daily release advice on the website, Upcoming Product Releases, which details products to be released in the week ahead.

## **DATA AVAILABLE ON REQUEST**

**41** As well as the statistics included in this and related publications, the ABS may have other relevant data available. Inquiries should be made to the Labour Force contact officer on (02) 6252 6525, email [labourforce@abs.gov.au](mailto:labourforce@abs.gov.au) or to any ABS office. The ABS Privacy Policy outlines how the ABS will handle any personal information that you provide to us.

## **EFFECTS OF ROUNDING**

**42** Estimates have been rounded and discrepancies may occur between sums of the component items and totals. Estimates of movement shown in this publication are obtained by taking the difference of unrounded estimates. The movement estimate is then rounded. Where a discrepancy occurs between the reported movement and the difference of the rounded estimates, the reported movement will be more accurate.

## **SYMBOLS AND ABBREVIATIONS**

### **43 SYMBOLS AND ABBREVIATIONS**

Symbol	Definition
'000	thousands
%	percentage
ABS	Australian Bureau of Statistics
CAI	computer assisted interviewing
cat. no.	catalogue number
Civ. pop.	civilian population
ERP	estimated resident population
Emp. to pop. ratio	employment to population ratio
f/t	full time
LFS	Labour Force Survey
NILF	not in the Labour Force
Part. rate	participation rate
p/t	part time
pts	percentage points
Seas adj.	seasonally adjusted
TAFE	Technical and Further Education
Unemp. rate	unemployment rate

## Glossary

### GLOSSARY

#### Actively looked for work

Actively looked for work includes:

- written, telephoned or applied to an employer for work;
- had an interview with an employer for work;
- answered an advertisement for a job;
- checked or registered with a Job Services Australia provider or any other employment agency;
- taken steps to purchase or start your own business;
- advertised or tendered for work; and
- contacted friends or relatives in order to obtain work.

#### Actual hours of work

Actual hours of work refers to a specified reference period (e.g. a week) and includes:

- hours actually worked during normal periods of work;
- time spent in addition to hours worked during normal periods of work (including overtime);
- time spent at the place of work on activities such as the preparation of the workplace, repairs and maintenance, preparation and cleaning of tools, and the preparation of receipts, time sheets and reports;
- time spent at the place of work waiting or standing by due to machinery or process breakdown, accident, lack of supplies, power or internet access, etc;
- time corresponding to short rest periods (resting time) including tea and coffee breaks or prayer breaks;

- travel time connected to work (excluding commuting time); and
- training and skills enhancement related to the job or employer.

Excluded are:

- hours paid for but not worked, such as paid annual leave, public holidays or paid sick leave;
- meal breaks (e.g. lunch breaks);
- paid and unpaid time 'on call';
- time spent on travel to and from work when no productive activity for the job is performed (e.g. commuting time); and
- time off during working hours to attend outside educational activities, even if it is authorised, e.g. those not connected to the job or employer.

For multiple job holders the LFS collects a separate measure of actual hours worked in main job and in all jobs.

### **Attending full time education**

Persons aged 15-24 years enrolled at secondary or high school or enrolled as a full time student at a Technical and Further Education (TAFE) college, university, or other educational institution in the reference week.

### **Attending school**

Persons aged 15-19 years enrolled at secondary or high school in the reference week.

### **Attending tertiary educational institution full time**

Persons aged 15-24 years enrolled full time at a TAFE college, university, or other educational institution in the reference week, except those persons aged 15-19 years who were still attending school.

### **Civilian population aged 15 years and over**

All usual residents of Australia aged 15 years and over except members of the permanent defence forces, certain diplomatic personnel of overseas governments customarily excluded from census and estimated population counts, overseas residents in Australia, and members of non-Australian defence forces (and their dependants) stationed in Australia.

### **Composite Estimation**

The estimation methodology used in the Labour Force Survey. Composite Estimation uses sample responses from nearby months as well as from the reference month to derive estimates for the reference month. This approach achieves gains in efficiency by exploiting the high similarity between the responses provided by the same respondent in previous months. For details see **Information Paper: Forthcoming Changes to Labour Force Statistics**, 2007 (cat. no. 6292.0).

### **Employed**

All persons aged 15 years and over who met one of the following criteria during the reference week:



- Worked for one hour or more for pay, profit, commission or payment in kind, in a job or business or on a farm (employees and owner managers of incorporated or unincorporated enterprises).
- Worked for one hour or more without pay in a family business or on a farm (contributing family workers).
- Were employees who had a job but were not at work and were:
  - away from work for less than four weeks up to the end of the reference week; or
  - away from work for more than four weeks up to the end of the reference week and received pay for some or all of the four week period to the end of the reference week; or
  - away from work as a standard work or shift arrangement; or
  - on strike or locked out; or
  - on workers' compensation and expected to return to their job.
- Were owner managers who had a job, business or farm, but were not at work.

### **Employed full-time**

Includes employed persons who usually worked 35 hours or more a week (in all jobs) and those who, although usually working less than 35 hours a week, worked 35 hours or more during the reference week.

### **Employed part-time**

Includes employed persons who usually worked less than 35 hours a week (in all jobs) and either did so during the reference week, or were not at work in the reference week.

### **Employment to population ratio**

For any group, the number of employed persons expressed as a percentage of the civilian population in the same group.

### **Estimated resident population (ERP)**

Estimated resident population (ERP), is Australia's official measure of the population of Australia and is based on the concept of usual residence. It refers to all people, regardless of nationality, citizenship or legal status, who usually live in Australia, with the exception of foreign diplomatic personnel and their families. It includes usual residents who are overseas for fewer than 12 months. It excludes overseas visitors who are in Australia for fewer than 12 months. Refer to Australian Demographic Statistics (cat. no. 3101.0).

### **Flow estimates**

Flow estimates are a measure of activity over a given period. For example, monthly hours worked in all jobs is a measure of the total number of hours worked in a calendar month.

### **Gross flows**

The matching of respondents who report in consecutive months enables analysis of the transition of individuals between the different labour force status classifications, referred to as the matched sample. The transition counts between the different labour force status classifications from one point in time to the next are commonly referred to as gross flows.

The figures presented in gross flows are presented in original terms only and do not align

with published labour force estimates. The gross flows figures are derived from the matched sample between consecutive months, which after taking account of the sample rotation and varying non-response in each month is approximately 80 percent of the sample.

Caution should be exercised when analysing these gross flows data due to:

- the figures presented sum to approximately 80 percent of the population values as the gross flows data are based on the matched sample only;
- there is no adjustment applied to account for changes due to seasonal patterns (referred to commonly as seasonal adjustment); and
- the estimates of relative sizes of each transition class are subject to bias due to the matched sample being a non-representative sample.

## **Labour force**

For any group, persons who were employed or unemployed, as defined.

## **Labour force status**

A classification of the civilian population aged 15 years and over into employed, unemployed or not in the labour force, as defined. The definitions conform closely to the international standard definitions adopted by the International Conferences of Labour Statisticians.

## **Long-term unemployed**

The number of persons unemployed for 52 weeks or over.

## **Long-term unemployment ratio**

The number of long-term unemployed persons, expressed as a percentage of the total unemployed population.

## **Market sector**

The market sector is an industry grouping comprising the following industries: Agriculture, forestry and fishing; Mining; Manufacturing; Electricity, gas, water and waste services; Construction; Wholesale trade; Retail trade; Accommodation and food services; Transport, postal and warehousing; Information media and telecommunications; Finance and insurance services; Rental, hiring and real estate services; Professional, scientific and technical services; Administrative and support services; Arts and recreation services; and Other services. Refer to Australian National Accounts: Concepts, Sources and Methods (cat. no. 5216.0).

## **Non-market Sector**

The non-market sector is an industry grouping comprising the following industries: Education and training; Public administration & safety; and Health care and social assistance. Refer to Australian National Accounts: Concepts, Sources and Methods (cat. no. 5216.0).

## **Monthly hours worked in all jobs**

Monthly hours worked in all jobs measures the total number of actual hours worked by employed persons in a calendar month. It differs from the actual hours worked estimates

(and the usual hours worked estimates) since these refer only to the hours worked in the reference week.

The methodology used to produce monthly hours worked in all jobs means that these are synthetic estimates. Seasonally adjusted and trend estimates of monthly hours worked in all jobs are available for the period July 1978 onwards.

Further information on the methodology used to produce the monthly hours worked in all jobs estimates is available on the ABS website in **Information Paper: Expansion of Hours Worked Estimates from the Labour Force Survey** (cat. no. 6290.0.55.001).

Actual and usual hours worked cannot be aggregated across time to produce either quarterly or annual estimates as they relate to only a single week in the month. In contrast, monthly hours worked in all jobs estimates are a true monthly measure, and may be aggregated across time to produce both quarterly and annual estimates.

### **Not in labour force**

Persons who were not in the categories employed or unemployed, as defined. They include people who undertook unpaid household duties or other voluntary work only, were retired, voluntarily inactive and those permanently unable to work.

### **Participation rate**

For any group, the labour force expressed as a percentage of the civilian population aged 15 years and over in the same group.

### **Response rate**

The number of fully responding dwellings expressed as a percentage of the total number of dwellings excluding sample loss. Examples of sample loss include: dwellings where all persons are out of scope and/or coverage; vacant dwellings; dwellings under construction; dwellings converted to non-dwellings; derelict dwellings; and demolished dwellings.

### **Seasonally adjusted series**

A time series of estimates with the estimated effects of normal seasonal variation removed. See Explanatory Notes for more detail.

### **Stock estimates**

Stock estimates are a measure of certain attributes at a point in time and can be thought of as stocktakes. For example, the total number of employed persons is an account of the number of people who were considered employed in the Labour Force Survey reference week.

### **Trend series**

A smoothed seasonally adjusted series of estimates. See Explanatory Notes for more detail.

### **Underemployment rate (proportion of labour force)**

The number of underemployed workers expressed as a percentage of the labour force.

### **Underemployment ratio (proportion of employed)**

The number of underemployed workers expressed as a percentage of total employed persons.

### **Underemployed workers**

Employed persons aged 15 years and over who want, and are available for, more hours of work than they currently have. They comprise:

- persons employed part time who want to work more hours and are available to start work with more hours, either in the reference week or in the four weeks subsequent to the survey; or
- persons employed full time who worked part time hours in the reference week for economic reasons (such as being stood down or insufficient work being available). It is assumed that these people wanted to work full time in the reference week and would have been available to do so.

### **Underutilisation rate**

The sum of the number of persons unemployed and the number of persons in underemployment, expressed as a proportion of the labour force.

### **Unemployed**

Persons aged 15 years and over who were not employed during the reference week, and:

- had actively looked for full time or part time work at any time in the four weeks up to the end of the reference week and were available for work in the reference week; or
- were waiting to start a new job within four weeks from the end of the reference week and could have started in the reference week if the job had been available then.

### **Unemployed looked for full time work**

Unemployed persons who:

- actively looked for full time work; or
- were waiting to start a new full time job.

### **Unemployed looked for only part time work**

Unemployed persons who:

- actively looked for part time work only; or
- were waiting to start a new part time job.

### **Unemployment rate**

For any group, the number of unemployed persons expressed as a percentage of the labour force in the same group.

### **Usual hours of work**

Usual hours of work refers to a typical period rather than the hours worked in a specified reference period. The concept of usual hours applies both to persons at work and to persons temporarily absent from work, and is defined as the hours worked during a typical week or day. Actual hours worked (for a specific reference period) may differ from usual hours worked due to illness, vacation, strike, overtime work, a change of job, or similar reasons.

## **Quality Declaration - Summary**

### **QUALITY DECLARATION - SUMMARY**

#### **INSTITUTIONAL ENVIRONMENT**

Labour Force statistics are compiled from the Labour Force Survey which is conducted each month throughout Australia as part of the Australian Bureau of Statistics (ABS) household survey program. For information on the institutional environment of the ABS, including the legislative obligations of the ABS, financing and governance arrangements, and mechanisms for scrutiny of ABS operations, please see ABS Institutional Environment.

#### **RELEVANCE**

The Labour Force Survey provides monthly information about the labour market activity of Australia's resident civilian population aged 15 years and over. The Labour Force Survey is designed to primarily provide estimates of employment and unemployment for the whole of Australia and, secondarily, for each state and territory.

#### **TIMELINESS**

The Labour Force Survey enumeration begins on the Sunday between the 5th and 11th of the month, except for the Christmas and New Year holiday period. In December enumerations starts between the 3rd and 9th (4 weeks after November enumeration begins). In January enumeration starts between the 7th and 13th (5 weeks after December enumeration begins).

Key estimates from the Labour Force Survey are published in two stages. The first, Labour Force, Australia (cat. no. 6202.0), is released 32 days after the commencement of enumeration for the month, with the exception of estimates for December which are published 39 days after the commencement of enumeration.

The second stage includes detailed data that were not part of the first stage and are published in Labour Force, Australia, Detailed - Electronic Delivery (cat. no. 6291.0.55.001) and Labour Force, Australia, Detailed, Quarterly (cat. no. 6291.0.55.003). The second stage is released 7 days after the first stage.

#### **ACCURACY**

The Labour Force Survey is based on a sample of private dwellings (approximately 26,000

houses, flats etc) and non-private dwellings, such as hotels and motels. The sample covers about 0.32% of the Australian civilian population aged 15 years or over. The Labour Force Survey is designed primarily to provide estimates of key labour force statistics for the whole of Australia and, secondarily, for each state and territory.

Two types of error are possible in an estimate based on a sample survey: non-sampling error and sampling error.

Non-sampling error arises from inaccuracies in collecting, recording and processing the data. Every effort is made to minimise reporting error by the careful design of questionnaires, intensive training and supervision of interviewers, and efficient data processing procedures. Non-sampling error also arises because information cannot be obtained from all persons selected in the survey. The Labour Force Survey receives a high level of cooperation, with an average response rate for the last year being 94%.

Sampling error occurs because a sample, rather than the entire population, is surveyed. One measure of the likely difference resulting from not including all dwellings in the survey is given by the standard error. There are about two chances in three that a sample estimate will differ by less than one standard error from the figure that would have been obtained if all dwellings had been included in the survey, and about nineteen chances in twenty that the difference will be less than two standard errors.

Standard errors of key estimates and movements since the previous month are available in Labour Force, Australia (cat. no. 6202.0). The standard error of other estimates and movements may be calculated by using the spreadsheet contained in Labour Force Survey Standard Errors, Data Cube (cat. no. 6298.0.55.001).

## **COHERENCE**

The ABS has been conducting the Labour Force Survey each month since February 1978. While seeking to provide a high degree of consistency and comparability over time by minimising changes to the survey, sound survey practice requires careful and continuing maintenance and development to maintain the integrity of the data and the efficiency of the collection.

The changes which have been made to the Labour Force Survey have included changes in sampling methods, estimation methods, concepts, data item definitions, classifications, and time series analysis techniques. In introducing these changes the ABS has generally revised previous estimates to ensure consistency and coherence with current estimates. For a full list of changes made to the Labour Force Survey see Chapter 20 in Labour Statistics: Concepts, Sources and Methods (cat. no. 6102.0.55.001).

## **INTERPRETABILITY**

The key estimates from the Labour Force Survey are available as original, seasonally adjusted and trend series. Seasonal adjustment is a means of removing the effects of normal seasonal variation from the series so other influences on the series can be more clearly recognised. Seasonal adjustment does not aim to remove the irregular influences which may be present and therefore month-to-month movements may not be reliable indicators of underlying behaviour. To assist in interpreting the underlying behaviour, the ABS produces the trend series by smoothing the seasonally adjusted series to reduce the impact of the irregular component. For further information, see A Guide to Interpreting Time

Series - Monitoring Trends (cat. no. 1349.0).

Further information on the terminology and other technical aspects associated with statistics from the Labour Force Survey can be found in the publication Labour Force, Australia (cat. no. 6202.0), which contains detailed Explanatory Notes, Standard Error information and a Glossary.

## ACCESSIBILITY

Please see the Related Information tab for the list of products that are available from this collection.

## What If

### WHAT IF...? REVISIONS TO TREND ESTIMATES

### EFFECT OF NEW SEASONALLY ADJUSTED ESTIMATES ON TREND ESTIMATES

#### TREND REVISIONS

Each time new seasonally adjusted estimates become available, trend estimates are revised. This revision is a combined result of the concurrent seasonal adjustment process and the application of surrogates of the Henderson average to the seasonally adjusted series (see paragraphs 28 to 37 of the Explanatory Notes).

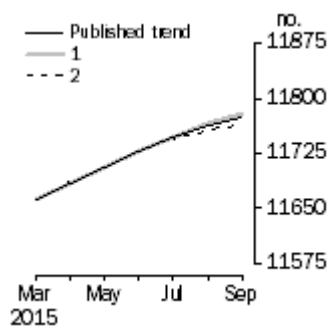
The examples in the tables below show two illustrative scenarios and the consequent revisions to previous trend estimates of employment and the unemployment rate. The revisions in the scenarios are due to the use of surrogates of the Henderson average, as the impact of revision of seasonally adjusted estimates can not be estimated in advance.

**1** The October seasonally adjusted estimate is **higher** than the September estimate by:  
0.23% for employment  
2.20% for the unemployment rate

**2** The October seasonally adjusted estimate is **lower** than the September estimate by:  
0.23% for employment  
2.20% for the unemployment rate

The percentage changes of 0.23% and 2.20% represent the average absolute monthly percentage changes in employment and the unemployment rate respectively. Estimates in the graphs have been calculated using unrounded estimates, and may be different from, but more accurate than, rounded estimates depicted in the corresponding table.

#### Employment

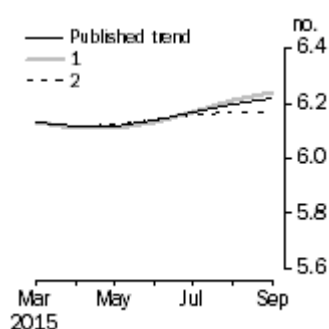


#### WHAT IF NEXT MONTH'S SEASONALLY ADJUSTED ESTIMATE IS:

Trend as published (1) 11 797.0 i.e. rises by 0.23% (2) 11 742.8 i.e. falls by 0.23%

2015			
June	11 728.1	11 728.1	11 729.0
July	11 747.2	11 747.3	11 744.9
August	11 763.4	11 764.8	11 756.8
September	11 775.8	11 780.0	11 764.8

## Unemployment Rate



#### WHAT IF NEXT MONTH'S SEASONALLY ADJUSTED ESTIMATE IS:

Trend as published (1) 6.3 i.e. rises by 2.20% (2) 6.0 i.e. falls by 2.20%

2015			
June	6.1	6.1	6.1
July	6.2	6.2	6.2
August	6.2	6.2	6.2
September	6.2	6.2	6.2

## Data Cubes (I-Note) - Data Cubes

The simultaneous introduction of two rotation groups per month between May and August 2013 will result in a lower proportion of the sample being matched during this period. In June 2013, the new sample for the more remote, less populated areas and non-private dwellings were introduced for Tasmania, Northern Territory and the Australian Capital Territory. The new sample in these areas in New South Wales, Victoria, Queensland, South Australia and Western Australia were introduced in July 2013. These are reflected in smaller estimates in the gross flow.

## Time Series Spreadsheet (I-Note) - Time Series Spreadsheet

The quarterly hours worked in all jobs by market and non-market sectors is estimated in end of calendar quarter months (March, June, September and December). The rebenchmarking of these series to the latest population benchmarks has now occurred with this publication. Further information about rebenchmarking the labour force estimates can be found on the Notes page of the August 2015 issue of the *Labour Force, Australia* (cat. no. 6202.0).



# **Time Series Spreadsheet (I-Note) - Time Series Spreadsheet**

Data for August 2014 to May 2015 have been revised, due to the incorrect inclusion of seasonal workers whose contract is ending as underemployed, and also therefore as underutilised. The ending of a seasonal worker's contract (e.g. fruit picker) because the relevant season has concluded is not considered an economic reason and therefore should not be included as underemployed. This does not impact the calculation of the unemployment rate.

Seasonal adjustment processes have resulted in minor discrepancies between seasonally adjusted and trend data across tables containing headline estimates and those containing quarterly underutilisation data. Data for total employed and unemployed persons will now be published in seasonally adjusted and trend terms within the spreadsheet tables containing quarterly underutilisation data. Estimates of seasonally adjusted and trend employed and unemployed persons in these tables are different to those published in tables containing headline estimates for Australia, as effectively one is based on data being seasonally adjusted and trended quarterly (consistent with underutilisation data), while other headline estimates are based on data being seasonally adjusted and trended monthly.

# **Time Series Spreadsheet (I-Note) - Time Series Spreadsheet**

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Seasonal adjustment processes have resulted in minor discrepancies between seasonally adjusted and trend data across tables containing headline estimates and those containing quarterly underutilisation data. Data for total employed and unemployed persons will now be published in seasonally adjusted and trend terms within the spreadsheet tables containing quarterly underutilisation data. Estimates of seasonally adjusted and trend employed and unemployed persons in these tables are different to those published in tables containing headline estimates for Australia, as effectively one is based on data being seasonally adjusted and trended quarterly (consistent with underutilisation data), while other headline estimates are based on data being seasonally adjusted and trended monthly.

## **Standard Errors**

### **STANDARD ERRORS**

### **STANDARD ERRORS**

The estimates in this publication are based on information gained from the occupants of a

sample survey of dwellings. Because the entire population is not surveyed, the published original, seasonally adjusted and trend estimates are subject to sampling error. The most common way of quantifying such sampling error is to calculate the standard error for the published estimate or statistic. For more information, see paragraphs 25 to 27 of the Explanatory Notes.

## LEVEL ESTIMATES

To illustrate, let us say the published level estimate for employed persons aged 15-19 years is 700,000 and the associated standard error is 9,000. The standard error is then used to interpret the level estimate of 700,000. For instance, the standard error of 9,000 indicates that:

- There are approximately two chances in three that the real value falls within the range 691,000 to 709,000 (700,000 + or - 9,000)
- There are approximately nineteen chances in twenty that the real value falls within the range 682,000 to 718,000 (700,000 + or - 18,000).

The real value in this case is the result we would obtain if we could enumerate the total population.

The following table shows the standard errors for this month's level estimates.

AUSTRALIA														
			NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Males	Females	Persons	
<hr/>														
Aged 15 years and over														
Employed														
	Full time	'000	25.6	18.1	17.3	7.4	11.3	2.9	2.5	2.8	31.7	23.2	38.5	
	Part time	'000	18.4	12.3	11.7	5.5	8.1	2.2	0.7	2.0	13.7	21.3	26.4	
	Total	'000	28.2	22.5	19.9	8.6	12.4	3.4	2.8	3.0	34.8	32.4	43.8	
Unemployed														
	Looking for f/t work	'000	9.3	8.0	8.1	3.4	5.0	1.1	0.8	1.0	12.4	10.0	16.1	
	Looking for p/t work	'000	5.9	5.5	5.0	2.1	2.7	0.6	0.4	0.8	6.5	7.6	10.0	
	Total	'000	11.1	9.7	9.2	3.9	5.7	1.3	1.0	1.3	14.1	12.6	19.1	
Labour force			'000	28.6	23.3	20.3	8.8	12.5	3.5	3.0	3.0	35.7	33.4	44.6
Not in labour force			'000	24.3	21.3	22.5	8.3	12.0	3.5	2.9	3.1	31.0	35.8	42.2
Unemployment rate														
	Looking for f/t work	pts	0.3	0.4	0.5	0.6	0.5	0.7	0.7	0.6	0.2	0.3	0.2	
	Looking for p/t work	pts	0.5	0.5	0.7	0.7	0.6	0.7	1.4	1.3	0.5	0.3	0.3	
	Total	pts	0.3	0.3	0.4	0.4	0.4	0.5	0.7	0.6	0.2	0.2	0.2	
Participation rate			pts	0.5	0.5	0.5	0.6	0.6	0.8	1.6	1.0	0.4	0.3	0.2
<hr/>														
Aged 15-19 years														
Employed														
	Full time	'000	3.7	2.0	2.6	1.0	1.7	0.5	0.2	0.4	4.7	3.7	5.4	
	Part time	'000	5.7	3.4	4.1	1.8	2.6	0.7	0.2	0.7	6.1	7.0	9.0	
	Total	'000	6.5	3.7	4.8	1.9	3.0	0.9	0.3	0.7	7.3	7.5	10.2	
Unemployed														
	Looking for f/t work	'000	2.5	2.1	3.0	1.0	1.2	0.4	0.2	0.2	3.7	3.1	4.8	
	Looking for p/t work	'000	3.5	3.3	3.0	1.2	1.3	0.4	0.2	0.6	4.5	4.0	6.1	
	Total	'000	4.4	4.1	4.4	1.6	1.8	0.6	0.3	0.6	5.9	5.1	7.8	
Labour force			'000	7.1	4.2	5.3	2.2	3.2	0.9	0.3	0.8	8.0	8.1	11.2
Not in labour force			'000	9.7	6.1	7.9	3.0	4.3	1.1	0.6	1.3	10.8	10.1	15.2
Unemployment rate														
	Looking for f/t work	pts	4.0	5.5	5.3	7.9	5.0	6.5	3.6	15.5	2.7	4.1	2.3	
	Looking for p/t work	pts	2.0	2.4	2.3	2.8	2.1	3.0	3.8	5.3	1.8	1.3	1.1	
	Total	pts	1.9	2.3	2.4	2.9	2.1	3.0	2.8	5.0	1.5	1.3	1.0	
Participation rate			pts	1.5	1.2	1.7	2.1	2.0	2.8	2.2	3.6	1.1	1.1	0.8

Unemployment to population ratio - looking for f/t work	pts	0.5	0.6	1.0	1.0	0.8	1.3	1.1	1.0	0.5	0.4	0.3
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## MOVEMENT ESTIMATES

The following example illustrates how to use the standard error to interpret a movement estimate. Let us say that one month the published level estimate for females employed part-time in Australia is 1,890,000; the next month the published level estimate is 1,900,000 and the associated standard error for the movement estimate is 11,900. The standard error is then used to interpret the published movement estimate of 10,000. For instance, the standard error of 11,900 indicates that:

- There are approximately two chances in three that the real movement between the two months falls within the range - 1,900 to 21,900 (10,000 + or - 11,900)
- There are approximately nineteen chances in twenty that the real movement falls within the range - 13,800 to 33,800 (10,000 + or - 23,800).

The following table shows the standard errors for this month's movement estimates.

AUSTRALIA														
			NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Males	Females	Persons	
Aged 15 years and over														
Employed														
	Full time	'000	15.0	11.9	9.3	3.8	6.7	1.7	1.9	1.8	18.4	13.6	23.5	
	Part time	'000	9.7	8.4	5.9	2.9	4.2	1.3	0.9	1.1	8.7	12.7	15.3	
	Total	'000	18.1	14.8	12.7	5.5	8.6	2.2	2.0	2.1	20.5	18.9	29.0	
Unemployed														
	Looking for f/t work	'000	9.5	7.9	7.8	3.6	5.2	1.1	0.8	1.2	12.5	9.9	16.0	
	Looking for p/t work	'000	6.2	5.4	4.4	2.2	3.1	0.7	0.5	1.0	6.5	7.9	10.1	
	Total	'000	11.6	9.6	9.0	4.2	5.9	1.3	0.9	1.4	14.0	12.7	19.2	
Labour force			'000	18.7	15.3	13.5	5.9	9.0	2.3	2.1	2.2	21.2	19.5	30.0
Not in labour force			'000	18.1	15.4	13.7	5.9	8.8	2.2	2.0	2.3	18.1	22.0	29.6
Unemployment rate														
	Looking for f/t work	pts	0.3	0.4	0.5	0.6	0.5	0.7	0.7	0.7	0.2	0.3	0.2	
	Looking for p/t work	pts	0.5	0.5	0.7	0.8	0.7	0.8	1.5	1.4	0.5	0.3	0.3	
	Total	pts	0.3	0.3	0.4	0.5	0.4	0.5	0.7	0.7	0.2	0.2	0.2	
Participation rate			pts	0.3	0.3	0.4	0.4	0.4	0.5	1.1	0.7	0.2	0.2	0.2
Aged 15-19 years														
Employed														
	Full time	'000	2.6	1.8	1.7	0.7	1.3	0.4	0.4	0.3	3.3	2.6	3.8	
	Part time	'000	3.8	3.1	2.6	1.3	1.9	0.5	0.4	0.5	4.2	4.8	6.0	
	Total	'000	4.4	3.4	3.0	1.4	2.1	0.6	0.5	0.5	4.9	5.1	6.7	
Unemployed														
	Looking for f/t work	'000	2.6	2.2	2.8	1.0	1.3	0.4	0.2	0.4	3.8	3.1	4.8	
	Looking for p/t work	'000	3.6	3.4	2.6	1.3	1.7	0.5	0.2	0.6	4.5	4.5	6.1	
	Total	'000	4.6	4.1	3.9	1.7	2.0	0.6	0.3	0.7	5.9	5.3	7.8	
Labour force			'000	4.7	3.8	3.2	1.5	2.2	0.7	0.6	0.6	5.4	5.4	7.2
Not in labour force			'000	6.0	5.1	3.9	1.8	2.8	0.7	0.8	0.7	7.1	6.6	9.3
Unemployment rate														
	Looking for f/t work	pts	4.1	6.5	5.8	8.9	4.9	6.7	3.7	18.1	3.0	4.4	2.5	
	Looking for p/t work	pts	2.1	2.5	2.5	3.0	2.5	3.5	3.4	5.9	1.8	1.4	1.1	
	Total	pts	1.9	2.5	2.6	3.1	2.2	3.2	2.7	5.7	1.6	1.4	1.1	
Participation rate			pts	1.0	1.0	1.0	1.4	1.4	2.0	3.5	2.5	0.7	0.8	0.5
Unemployment to population ratio - looking for f/t work			pts	0.6	0.6	0.9	1.0	0.8	1.3	0.9	1.6	0.5	0.4	0.3

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